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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,079	06/25/2003	Leo Zhaoqing Liu	Rhodia.02036 us	6545

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DANN, DORFMAN, HERRELL & SKILLMAN
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EXAMINER	
WHITE, EVERETT NMN	
ART UNIT	PAPER NUMBER
1623	
MAIL DATE	DELIVERY MODE
12/03/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/607,079	LIU ET AL.	
	Examiner	Art Unit	
	EVERETT WHITE	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed August 26, 2008 has been received, entered and carefully considered. The amendment affects the instant application accordingly:

(A) Claims 1-20 and 29-38 have been canceled;
(B) Claim 1 has been amended;
(C) Comments regarding Office Action have been provided drawn to:

(I) 102(b) rejections, which have been withdrawn;
(II) 103(a) rejection, rendered moot by new ground of rejection over newly cited US Patent.

2. Claims 21-28 are pending in the case.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 21-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicants amended the claimed invention to recite a step that involved drying the mixture after forming the mixture, but before irradiation of the mixture. No general teaching of this procedure was noted in the instant specification. Although, Applicant points to Example 1 in the instant specification for support of the amendment, such limited support is deem to be insufficient since the claims cover a much broader scope than the narrower procedure disclosed in Example 1 of the instant specification. Thus, the example is not commensurate with the scope of claims herein. Therefore, claims 21-28 are rejected for inserting new matter into the claims.

Claim Rejections - 35 USC § 103

New Ground of Rejection

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 21-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Restaino et al (US Patent No. 3,461,052, already of record) in view of Jost et al (US Patent No. 5,223,171, already of record) or Billmers (US Patent No. 4,973,680, newly cited).

Applicants amended the claims to now claim a method for grafting an unsaturated monomer onto a polysaccharide comprising the steps of: (1) forming a mixture comprised of an unsaturated monomer and a water soluble or water dispersible

polysaccharide; (2) drying the mixture; and (3) irradiating the mixture with an amount of electron beam radiation sufficient to form an unsaturated monomer-water soluble or water dispersible polysaccharide graft copolymer, wherein the graft copolymer is depolymerized to a molecular weight lower than the molecular weight of the ungrafted polysaccharide, and the polysaccharide in the copolymer has a molecular weight of no more than 700,000 Datons. Additional limitations in the dependent claims include specific unsaturated monomers and specific polysaccharides.

The Restaino et al patent discloses a process for the production of graft substrates by ionizing radiation, wherein a hydrophilic polymeric substrate is irradiated in the presence of a solution of a monomeric vinyl compound (see abstract). See column 2, 1st paragraph wherein suitable substrates materials are listed, which include cellulose, wool, starch, alginic acid and the alginates, vegetable gums such, for example, as locust bean gum, guar flour, or gum tragacanth, gelatin, casein, pectin, polyvinyl alcohol, hydrophile high molecular weight polyalkylene glycols, and the like, which meet the requirement of the polysaccharides disclosed in instant Claims 22-25. Suitable vinyl monomers are listed in the 2nd paragraph of column 2, which include vinyl acetate, acrylic acid and its esters, methacrylic acid and its esters, acrylamide, acrylonitrile, styrene, vinyl toluene, vinyl pyridine, alkyl vinyl pyridines, divinyl benzene, butadiene, N,N-methylene bis-acrylamide, and the like, which meet the requirements of of the unsaturated monomers disclosed in instant Claims 22 and 26-28. The Restaino et al patent also teaches using radiation to produce graft copolymers wherein the radiation may also be used to depolymerize the polymers. See column 3, 2nd paragraph wherein Restaino et al patent teaches that useful graft copolymers of cellulose degradation products may be obtained by employing higher radiation doses.

The method for grafting an unsaturated monomer onto a polysaccharide of the instant claims differs from the process of producing graft copolymers in the Restaino et al patent by claiming a drying step after forming the mixture, which proceeds to irradiation of a dry mixture.

However, the Billmers patent suggests that irradiation of a dry mixture for grafting is known in the art by disclosing methods for preparing graft polymers which include

polymerization in water, in water-solvent mixtures, and in the dry state, which may be initiated by irradiative techniques (see column 9, lines 59-62). The Billmers patent teaches preparation of polysaccharide graft polymers having structure (II) " Sacch--O-(-G)$_m$(M)$_n$ " (see column 2, line 57), wherein Sacch is a polysaccharide and G is the residue of a polymerizable unsaturated monomer, which embraces the polysaccharide and unsaturated monomer recited in the instant claims.

The method for grafting an unsaturated monomer onto a polysaccharide of the instant claims also differs from the process of producing graft copolymers in the Restaino et al patent by claiming that the polysaccharide in the copolymer has a molecular weight of no more than 700,000 Daltons.

However, the Jost et al, which discloses detergent composition containing biodegradable graft polysaccharide shows that graft polysaccharide which consists essentially of a polydextrose having an average-weight molecular mass of less than 10,000 is well known in the art (see abstract). The average-weight molecular mass of less than 10,000 disclosed in the Jost et al patent falls with the requirement of the instant claims that the polysaccharide in the copolymer has a molecular weight of no more than 700,000 Daltons. See column 2, lines 22-25, wherein the Jost et al patent discloses graft polydextrose being obtained by any known process for grafting ethylenically unsaturated monomers onto polysaccharides and the next sentence which states that the grafting may be effected by irradiation, which is within the scope of the process requirements of instant Claims 21-28.

One having ordinary skill in the art would have been motivated to combine the teaching of the Restaino et al patent with the teachings of the Billmers and Jost et al patent since each of the patents disclose preparation of polysaccharide by grafting a unsaturated monomer onto a polysaccharide.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the grafting conditions use to produce graft copolymers via radiation of the Restaino et al patent with grafting under dry conditions in view of the recognition in the art, as evidence by the Billmers patent, that the preparation of graft polysaccharide in a dry state is an effective procedure for attaching

unsaturated monomers onto polysaccharides. It also would have been obvious to produce polysaccharide having a molecular weight of not more than 700,000 Daltons in view of the recognition in the art, as evidenced by the Jost et al patent, that polysaccharide having an average-weight molecular mass of less than 10,000 allows for the preparation of a product which is biodegradable.

7. Applicant's arguments with respect to Claims 21-28 have been considered but are moot in view of the new ground(s) of rejection.

Information Disclosure Statement

8. The information disclosure statement filed October 9, 2007 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Summary

9. All the pending claims (Claims 21-28) are rejected.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Examiner's Telephone Number, Fax Number, and Other Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EVERETT WHITE whose telephone number is (571)272-0660. The examiner can normally be reached on 9:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia A. Jiang can be reached on 571-272-066127. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Everett White/
Examiner
Art Unit 1623

/Shaojia Anna Jiang/
Supervisory Patent Examiner, Art Unit 1623